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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,774

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Remy Bruno

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YOUNG & THOMPSON
209 Madison Street
Suite 500
ALEXANDRIA, VA 22314

EXAMINER

LAO, LUN S

ART UNIT

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2614

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/542,774	BRUNO ET AL.	
	Examiner	Art Unit	
	LUN-SEE LAO	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07-20-2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This action is response to the preliminary amendment filed on 07-20-2005. Claims 3, 5-7, 9,10, 12, 13,14,17, 19 and 21 have been amended. Claims 1-22 are pending.

Drawings

2. The drawings are objected to because:

In FIG. 2, blocks 1 and 4 are not labeled.

In FIG. 3, blocks 10, 20, 30 ,40, 50,60,80,90 are not labeled.

In FIG. 4, blocks 91,92 and 93 are not labeled.

In FIG. 5, blocks 32,34,36,38 and 39 are not labeled.

In FIG. 7, blocks 51-57 are not labeled.

In FIG. 10, blocks 112,114 and 116 are not labeled.

Correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim1-35 of U.S. Patent No. 7,394,904. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-22 of US patent application 10/542,774 are similar in scope to claims 1-35 of the US patent 7,394,904 with obvious wording variation, they are both describing a method of controlling a sound field reproduction unit (2) comprising numerous reproduction elements, using a plurality of sound information input signals which are each associated with a general pre-determined reproduction direction which is defined in relation to a given point. Claims 1-22 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-35 of U.S. Patent 7,394,904.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

5. Claims 1-13 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent and recent Federal Circuit decisions indicate that a statutory “process” under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the controlling method including steps for determining at least spatial characteristics of the reproduction unit and for determining adaptation filters and for determining signal for controlling the elements are of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine.

Claim 13 is directed to non-statutory subject matter in that computer programs claimed as computer listings per se, i.e., the descriptions or expressions of the programs, are not physical “things.” They are neither computer components nor statutory processes, as they are not “acts” being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program’s functionality to be realized. In contrast, a claimed computer-readable medium encoded

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with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-12 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ise (JP 11-168792).

Consider claim 1 Ise teaches a method for controlling a sound field reproduction unit See fig.5 (C)) comprising a plurality of reproduction elements (104) using a plurality of sound data input signals (U(n)) each associated with a predetermined general reproduction direction defined relative to a given point (C) in space, in order to obtain reproduced sound field of specific characteristics that are substantially independent of the intrinsic reproduction characteristics of the unit (C), characterized in that it comprises:

a step for determining at least spatial characteristics of the reproduction unit (104), permitting the determination of parameters that are representative, in the case of at least one element (102) of the reproduction unit (104), of its position in the three spatial

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dimensions relative to the given point (C)(see detailed description page 4, [0016]- page 5, [0027]);

a step for determining adaptation filters (122) using the at least spatial characteristics of the reproduction unit (102) and the predetermined general reproduction directions associated with the plurality of sound data input signals (U(n));

a step for determining at least one signal for controlling the elements(120) of the reproduction unit by applying the adaptation filters to the plurality of sound data input signals (U(n)); and - a step for providing the at least one control signal with a view to application to the reproduction elements (104)(see detailed description page 12 [0089]- page 13, [0093]).

Consider claims 2-4, Ise teaches characterized in that step for determining at least spatial characteristics of the reproduction unit (see fig.5 (104)) comprises an acquisition sub-step enabling all or some of the characteristics of the reproduction unit (104) to be determined(see abstract); and characterized in that the step for determining at least spatial characteristics of the reproduction unit (102) comprises a calibration step (104) enabling all or some of the characteristics of the reproduction unit (104) to be provided(see detailed description page 12 [0089]- page 13, [0093]); and characterized in that the calibration sub-step (108) comprises, in the case of at least one of the reproduction elements (104) :

a sub-step for transmitting a specific signal (110) to the at least one element (104) of the reproduction unit (104); a sub-step for acquiring the sound wave emitted in response by the at least one element (104); a sub-step (102) for converting the acquired

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signals into a finite number of coefficients representative of the emitted sound wave; and a sub-step (122) for determining spatial and/or sound parameters of the element (3n) on the basis of the coefficients representative of the emitted sound wave(104)(see detailed description page 12 [0089]- page 13, [0093]).

Consider claims 5-7, Ise teaches characterized in that the calibration sub-step also comprises a sub-step for determining the position in at least one of the three spatial dimensions of the at least one element of the reproduction unit (see fig.5 (104) and detailed description page 29, [0240]- [0245]); and characterized in that the calibration step comprises a sub-step for determining the frequency response of the at least one element of the reproduction unit(see fig.5 (104))(see figs 2-3 and detailed description page 3 [0036]- page 4, [0038]); and to characterized in that step for determining adaptation filters(see fig 5(102,122)) comprises: a sub-step for determining a decoding matrix representative of filters permitting compensation for the changes in reproduction caused by the spatial characteristics of the reproduction unit (104); a sub-step for determining an ideal multi- channel radiation matrix representative of the predetermined general directions associated with each data signal of the plurality of input signals ($U(n)$); and a sub-step for determining a matrix representative of the adaptation filters using the decoding matrix and the multi-channel radiation matrix(see detailed description page 5,[0019]- page 6, [0033]).

Consider claims 8-10, Ise teaches characterized in that the step for determining adaptation filters(see fig.5(102,122)) comprises a plurality of calculation sub-steps (110) permitting the provision of a limit order of the spatial precision of the adaptation filters, a

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matrix corresponding to a spatial window representative of the distribution in space of the desired precision during the reconstruction of the sound field, and a matrix representative of the radiation of the reproduction unit (104), the sub-step for calculating the decoding matrix being carried out using the results of these calculation sub steps (see detailed description page 8,[0042]- page 10, [0068]); and characterized in that the matrices for decoding , ideal multi-channel radiation and adaptation are independent of the frequency, step for determining at least one signal for controlling the elements of the reproduction unit(see fig.5 (104)) by applying the adaptation filters corresponding to simple linear combinations followed by a delay(see detailed description page 11,[0070]- page 13, [0095]); and characterized in that the step for determining characteristics of the reproduction unit (see fig.5 (104)) permits the determination of sound characteristics of the reproduction unit (104)) and in that the method comprises a step (60) for determining filters for compensating for these sound characteristics, the step for determining at least one control signal then comprising a sub-step for applying the sound compensation filters(see detailed description page 12 [0089]- page 13, [0093]).

Consider claims 11 and 12, Ise teaches characterized in that the step for determining sound characteristics is suitable for providing parameters representative, in the case of at least one element, of its frequency response(see figs 2-3 detailed description page 6 [0035]- page 7, [0038]); and characterized in that the step for determining at least one control signal comprises a sub-step for adjusting the gain and applying delays in order to align temporally the wavefront of the reproduction elements (see fig 5 (104)) as a

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function of their distance from the given point (see detailed description page 5,[0019]- page 6, [0033]).

Consider claim 15. It teaches a device for controlling a sound field reproduction unit (see fig.5 (104)) comprising a plurality of reproduction elements (104), comprising input means (U(n)) for a plurality of sound data input signals (U(n)) each associated with a predetermined general reproduction direction defined relative to a given point (C), characterized in that it also comprises:

means (120) for determining at least spatial characteristics of the reproduction unit (104), permitting the determination of parameters that are representative, in the case of at least one element of the reproduction unit (104), of its position in the three spatial dimensions relative to the given point (c) (see detailed description page 28,[0237]- page 29, [0245]);

means (122) for determining adaptation filters using the at least spatial characteristics of the reproduction unit (104) and predetermined general reproduction directions associated with the plurality of sound data input signals (U(n)) ; and

means (122) for determining at least one signal for controlling the elements of the reproduction unit (104) by applying the adaptation filters (122) to the plurality of sound data input signals (U(n))(see detailed description page 12 [0089]- page 13, [0093]).

Consider claims 16-18. It teaches a device characterized in that the means for determining the at least spatial characteristics of the reproduction unit (see fig.5 (104)) comprise means (116) for the direct acquisition of the characteristics(see detailed description page 12 [0089]- page 13, [0093]); and a device characterized in that it is

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suitable for being associated with calibration means (see fig.5)) permitting the determination of the at least spatial characteristics of the reproduction unit (104)(see detailed description page 12 [0089]- page 13, [0093]); and a device characterized in that the calibration means comprise means (see fig.5) for acquiring a sound wave which comprise four pressure sensors(106) arranged in accordance with a general tetrahedral shape(see detailed description page 12 [0089]- page 13, [0093]).

Consider claims 19-22, Ise teaches a device characterized in that the means(see fig.5) for determining characteristics are suitable for determining sound characteristics of at least one of the elements of the reproduction unit (104), the device comprising means for determining sound compensation filters using the sound characteristics, and the means(102) for determining at least one control signal being suitable for the application of the sound compensation filters(see detailed description page 12 [0089]- page 13, [0093]); and a device characterized in that the means(see fig.5) for determining the sound characteristics are suitable for determining the frequency response (see fig.2 and 3)) of the elements of the reproduction unit(104) (see detailed description page 6 [0035]- page 7, [0038]); and an apparatus for processing audio and video data, comprising means (112) for determining a plurality of sound data input signals ($U(n)$) each associated with a predetermined general reproduction direction defined by a given point (c), characterized in that it also comprises a device for controlling la reproduction unit (104) (see detailed description page 6 [0035]- page 7, [0038]); and an apparatus characterized in that the means(see fig.5) for determining a

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plurality of input signals(U(n)) are formed by a unit (206) for reading and decoding digital audio and/or video discs(see detailed description page 6 [0035]- page 7, [0038]).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ise (JP 11-168792) in view of Lavoie et al. (US PAT. 7,158,643).

Consider claim 13, Ise does not explicitly teach a computer program comprising program code instructions for performing the steps of the program is performed by a computer.

However, Lavoie teaches a computer program comprising program code instructions for performing the steps of the program is performed by a computer(see col. 6 line 11-56); and a removable medium of the type comprising at least one processor and a non-volatile memory element, characterized in that the memory comprises a program comprising code instructions for performing the steps of the processor performs the program(see col. 6 line 11-56 and col.10 line 20-61).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Lavoie into Ise to provide more efficiency to control reproduction sound field by using a multi-channel signals.

Consider claim 14, Ise does not explicitly teach a removable medium of the type comprising at least one processor and a non-volatile memory element, characterized in that the memory comprises a program comprising code instructions for performing the steps of the processor performs the program.

However, Lavoie teaches a removable medium of the type comprising at least one processor and a non-volatile memory element, characterized in that the memory comprises a program comprising code instructions for performing the steps of the processor performs the program (see col. 6 line 11-56 and col.10 line 20-61).

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to combine the teaching of Lavoie into Ise to provide more efficiency to control reproduction sound field by using a multi-channel signals.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Speiser (US PAT. 4,060,850) is cited to show other related method and device for controlling unit using a multi-channel signal.

11. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(571) 273-8300

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Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao, Lun-See
/LUN-SEE LAO/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 02-23-2009

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614